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10/539,739

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Joel Choisnet

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EXAMINER

RALIS, STEPHEN J

ART UNIT

PAPER NUMBER

3742

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|---------------------------------------|--|
| Office Action Summary | Application No. 10/539,739 | Applicant(s) CHOISNET, JOEL | |
| | Examiner STEPHEN J. RALIS | Art Unit 3742 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 September 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 June 2005 and 11 April 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Applicant is respectfully requested to provide a location within the disclosure to support any further amendments to the claims due to when filing an amendment an applicant should show support in the original disclosure for new or amended claims. See MPEP § 714.02 and § 2163.06 ("Applicant should specifically point out the support for any amendments made to the disclosure.").

Response to Amendment/Arguments

3. Applicant's arguments filed 01 September 2009 have been fully considered but they are not persuasive as set forth below.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 4, 6 and 7 recite the limitation "a normal switching time" in line 2. It is unclear and uncertain to the examiner to whether the "a normal switching time" in claims 4, 6 and 7 is the same or different from the "a switching time" recited to the preceding claim 1. In addition, it is unclear and indefinite to the relationship between "a normal

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switching time" and a "switching time". Further clarification is required to either further differentiate the "a switching time" and the "a normal switching time" or make the recited instances equivalent.

Claim 1 recites the limitation "the control means..." in line 8; Claim 2 recites the limitation "wherein the control means" in line 2; Claims 4-10 recites the limitation "the control means..." in line 1. There is insufficient antecedent basis for these limitations in the claims. Furthermore, it is unclear and uncertain to whether "the control means" is the "means for controlling the electronic switch" or "means for controlling a switching time of the electronic switch" as recited in claim 1. Further clarification is required.

In general, the claims are replete with such 35 U.S.C. 112, second paragraph issues. The above notes are exemplary with respect to all of the 35 U.S.C. 112, second paragraph rejections present in the instant case, all claims must be carefully reviewed and appropriate corrections should be made in response to this rejection.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hancock et al. (U.S. Patent No. 5,847,367) in view of Frus et al. (U.S. Patent No. 5,754,011).

NOTE: Where the statutory basis for the rejection remains the same, and the evidence relied upon in support of the rejection remains the same, a change in the discussion of, or rationale in support of, the rejection does not necessarily constitute a new ground of rejection (see MPEP § 1207.03). Therefore, the rejection, as set forth below, is deemed to be based on the same statutory basis as the previous rejection in the Office, mailed 04 March 2009.

Hancock et al. disclose a device for regulating the temperature of a heating wire (see Figure 1), the device comprising: an electronic switch (switching means 2; column 3, lines 59-62) connected in series with the heating wire (heating element 3) (see Figure 1), means for controlling the electronic switch (switching means 2) (column 3, line 55 – column 7, line 32; see Figure 1), wherein the device also comprises means for controlling a switching time (column 6, line 13 – column 7, line 32; see Figure 1) of the electronic switch (switching means 2) and wherein the control means for controlling a switching time (column 6, line 13 – column 7, line 32; see Figure 1) of the electronic switch (switching means 2) (see Figure 1) to control the voltage across the terminals of the switch (switching means 2) as a function of a setpoint voltage (scaling circuit 8

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comprising resistor 8a and variable resistor 8b) defining the switching time (Abstract; control circuit 10; column 3, line 55 – column 7, line 32; see Figure 1).

With respect to the limitations of claim 2, Hancock et al. disclose means (comparator 9) for measuring the temperature of the heating wire (Abstract), wherein the control means turn the electronic switch (switching means 2) on and off as a function of the temperature of the heating wire (heating element 3) (Abstract; column 3, line 55 – column 7, line 32; see Figure 1).

With respect to the limitations of claim 3, Hancock et al. disclose the means for measuring the temperature of the heating wire (heating element 3) comprise means for (comparator 9) comparing the voltage present at the common point between the electronic switch (switching means 2) and the heating wire (heating element 3) with a reference voltage (input from scaling circuit 8 comprising resistor 8a and variable resistor 8b) (Abstract).

With respect to the limitation of the voltage present at the common point between the electronic switch and the heating wire, Hancock et al. disclose a series circuit loop comprising a switching means (2), current sensor (7), resistor (8a), variable resistor (8b) and heating element (3) with a common point designated between electronic switch (switching means 2) and the heating element (3) via the series loop with the current sensor (7), resistor (8a), variable resistor (8b) also between the electronic switch (switching means 2) and the heating element (3). Therefore, Hancock et al. fully meets “the voltage present at the common point between the electronic switch and the heating wire” given its broadest reasonable interpretation.

With respect to the limitations of claims 6 and 7, Hancock et al. disclose the output of latch (17) being connected to the input (10a) of the switch control circuit (10) which is connected to the switch (2). Hancock et al. further disclose when the latch (17) is in an "ON" state the switch (2) consequently is "ON" and current flows through the heating element (3) (column 6, line 30 -column 7, line 32). The switch (2) would have a shorter frequency switching time when taken in isolation compared to that of the logic truth table disclosed in column 6, lines 40-45. Therefore, Hancock et al. fully meets "the control means define a switching time that is longer than the normal switching time of the electronic switch taken in isolation" given its broadest reasonable interpretation.

With respect to the limitations of claim 5 and 8-10, Hancock et al. disclose the control means (see Figure 1) comprising an operational amplifier (comparator 9) having a first input (12) being connected to the common point (between switch 2 and current sensor 7) of the heating wire (heating element 3) and of the electronic switch (switching means 2), and in addition, a second input (11) receiving the setpoint voltage (scaling circuit 8 comprising resistor 8a and variable resistor 8b) with the output (13) controlling, in part, the turning-on and the turning-off of the electronic switch (switching means 2). Therefore, Hancock et al. fully meets "the control means comprise an operational amplifier, whereof a first input is connected to the common point of the heating wire and of the electronic switch, whereof a second input receives the setpoint voltage and whereof the output controls the turning-on and the turning-off of the electronic switch" given its broadest reasonable interpretation.

Hancock et al. discloses all of the limitations of the claimed invention, as previously set forth, except for the control means for controlling a switching time of the electronic switch having the switching time being a time necessary for the switch to transition from one state to assume another; and the control means defining a switching time that is variably prolonged as compared to a normal switching time of the electronic switch taken in isolation.

However, a control means for controlling the switching time of an electronic switch in which the switching time is variably prolonged compared to a normal switching time is known in the art. Frus et al., for example, teach a control means (network 37) holding off the current applied to a switch (32) for a sufficient time to transition from its non-conducting state to its conducting state (column 1, lines 40-45; column 11, lines 7-23). Frus et al. further teach the advantage of such a configuration provides protection of the solid-state switch, thereby increasing the operational longevity of the switching component.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Hancock et al. with the switching delay of Frus et al. in order to provide a means to protect switching components, thereby increasing the operational longevity of the switching component.

Similarly, the examiner asserts that applying a known technique to a known device ready for improvement would yield predictable results. That is, it would have been recognized by one of ordinary skill in the art that applying the known technique taught by Frus et al. to the device for regulating the temperature of a heating wire of

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Hancock et al. would have yielded predictable results and resulted in an improved system, namely, providing a control means for controlling the switching time of an electronic switch in which the switching time is variably prolonged compared to a normal switching time in Hancock et al. to provide protection of the solid-state switch, thereby increasing the operational longevity of the switching component.

9. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prager (U.S. Publication No. 2002/0130123) in view of Frus et al. (U.S. Patent No. 5,754,011).

NOTE: Where the statutory basis for the rejection remains the same, and the evidence relied upon in support of the rejection remains the same, a change in the discussion of, or rationale in support of, the rejection does not necessarily constitute a new ground of rejection (see MPEP § 1207.03). Therefore, the rejection, as set forth below, is deemed to be based on the same statutory basis as the previous rejection in the Office, mailed 04 March 2009.

Prager discloses a device for regulating the temperature of a heating wire (Title), the device comprising: an electronic switch (internal power switch 6/thermostatic switch 7) connected in series with the heating wire (heating element 10) (see Figure 2), means for controlling the electronic switch (electronic assembly 1'; see Figure 2), wherein the device also comprises means for controlling a switching time (control unit 40) (page 3, paragraph 3; page 3, paragraph 33) of the electronic switch (internal power switch 6/thermostatic switch 7) and wherein the control means (control unit 40) for controlling a

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switching time (control unit 40) (page 3, paragraph 3; page 3, paragraph 33) of the electronic switch wherein the switching time is a time necessary for the switch to transition from one state to assume another to control the voltage across the terminals of the switch (internal power switch 6/ thermostatic switch 7) as a function of a setpoint voltage defining the switching time (Abstract).

With respect to the limitation of claims 5 and 10, Prager discloses the amplifier (50) may be a comparator (page 3, paragraph 35) and furthermore the device including means for supplying a voltage drop arising at the measuring resistance as an input signal to the control unit (40) for evaluation of the input signal (Abstract). Prager discloses a amplifier (50) being utilized as a comparator with an output being the voltage drop when the heating element is in use. The voltage drop would have to be the difference between a reference voltage and the voltage being current used by the heating element in order for a comparator to produce such an output signal. Therefore, Prager fully meets "the control means comprise an operational amplifier, whereof a first input is connected to the common point of the heating wire and of the electronic switch, whereof a second input receives the setpoint voltage and whereof the output controls the turning-on and the turning-off of the electronic switch" given its broadest reasonable interpretation.

Prager discloses all of the limitations of the claimed invention, as previously set forth, except for the control means for controlling a switching time of the electronic switch having the switching time being a time necessary for the switch to transition from one state to assume another; the control means defining a switching time that is

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variably prolonged as compared to a normal switching time of the electronic switch taken in isolation; means for measuring the temperature of the heating wire, wherein the control means turns the electronic switch on and off as a function of the temperature of the heating wire; and the means for measuring the temperature of the heating wire comprising means for comparing the voltage present at the common point between the electronic switch and the heating wire with a reference voltage.

However, a control means for controlling the switching time of an electronic switch in which the switching time is variably prolonged compared to a normal switching time is known in the art. Frus et al., for example, teach a control means (network 37) holding off the current applied to a switch (32) for a sufficient time to transition from its non-conducting state to its conducting state (column 1, lines 40-45; column 11, lines 7-23). Frus et al. further teach the advantage of such a configuration provides protection of the solid-state switch, thereby increasing the operational longevity of the switching component. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Hancock et al. with the switching delay of Frus et al. in order to provide a means to protect switching components, thereby increasing the operational longevity of the switching component.

In addition, Prager teaches the control unit (40) having the function of signaling the current flow through the heating element (10). However, Prager further teaches the control unit (40) can also, *alternatively, or in addition to, indicate any present heating conditions and/or other present conditions which are derivable from the simple event whether or not a current flow is detected at all and/or derivable from the value of the*

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current sensed by the voltage drop and/or derivable from the duration of periods of current flow and non-current flow (page 3, paragraph 31-32). Prager further teach temperature setting switches such as thermostatic switch (7) may be self-resetting temperature switches and may be in series or in parallel with the internal power switch (6) (page 4, paragraph 41).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Prager et al. with the switching delay of Frus et al. in order to provide a means to protect switching components, thereby increasing the operational longevity of the switching component.

Similarly, the examiner asserts that applying a known technique to a known device ready for improvement would yield predictable results. That is, it would have been recognized by one of ordinary skill in the art that applying the known technique taught by Frus et al. to the device for regulating the temperature of a heating wire of Prager would have yielded predictable results and resulted in an improved system, namely, providing a control means for controlling the switching time of an electronic switch in which the switching time is variably prolonged compared to a normal switching time in Prager to provide protection of the solid-state switch, thereby increasing the operational longevity of the switching component.

In addition, to provide a means for measuring the temperature of the heating wire, wherein the control means turns the electronic switch on and off as a function of the temperature of the heating wire would have been a mere engineering expediency as Prager clearly teaches the ability to determine present heating conditions by the sensed

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voltage drop as well as the use of thermostatic switches in use being under the same control means.

With respect to claims 6-9, see rejections of claims 4, 5 and 10 above over Prager.

Remarks

10. With respect to applicant's reply/argument that Frus et al. teach away from delaying switching time or transition from a non-conductive state to a conductive state, the examiner respectfully disagrees. Frus et al. explicitly teach providing protection for the solid-state-switch (32) in the circuit by holding off the current discharged from the capacitor (30) ***for a time sufficient*** for the switch (32) to transition from its non-conducting state to its conducting state is known in the art (column 11, lines 17-23). Frus et al. further teach ***controlling the rise time*** of the current in this manner maximizes the life of the solid-state switch... by providing such components an opportunity to pass through their transition states before being taxed with a full, high energy pulse (column 1, lines 40-45). Frus et al. is clearly concerned with the energy distribution in a switch during transition from a non-conducting state to a conducting state with providing a delaying of current application to extend the life of the switch. Furthermore, the examiner can find no teaching to criticize, discredit or otherwise discourage trying to delay switching time or transition from a non-conductive state to a conductive state (see MPEP § 2123). Therefore, the examiner asserts that Frus et al. do not teach away from delaying switching time or transition from a non-conductive

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state to a conductive state of Hancock et al. or Prager given its broadest reasonable interpretation.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to STEPHEN J. RALIS whose telephone number is (571)272-6227. The examiner can normally be reached on Monday - Friday, 8:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tu Hoang can be reached on 571-272-4780. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Stephen J Ralis/
Primary Examiner, Art Unit 3742

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SJR
December 30, 2009